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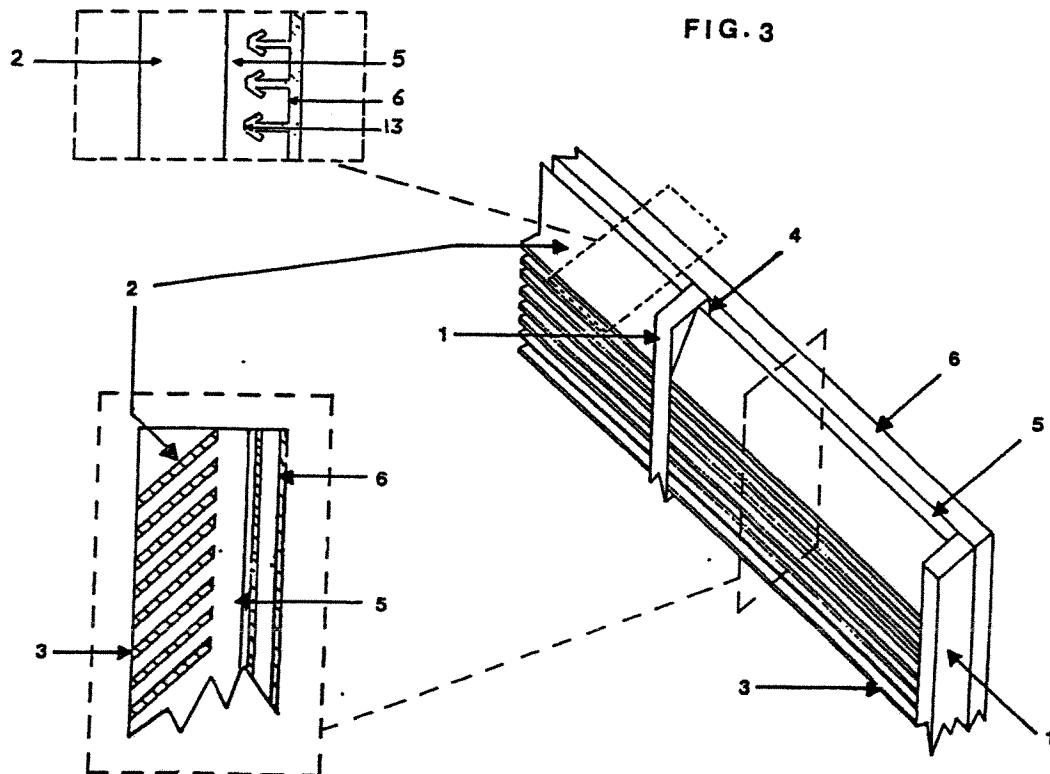
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GB 2198696 A

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(54) Vehicle spray suppressor

(57) A spray suppression device for vehicles comprises a backing sheet (6) and a plurality of generally parallel, elongate slats (2) spaced from the backing sheet. The slats (2) have their longer dimension parallel with the backing sheet and their shorter dimension inclined to the plane of the backing sheet. The backing sheet includes a plurality of ribs (13) which are of generally T-shaped cross section modified towards an arrow-head shape and which extend at 90° to the slats, to act as drainage channels. The device may be used as mudflap or may be located around the inside surface of a mudguard.



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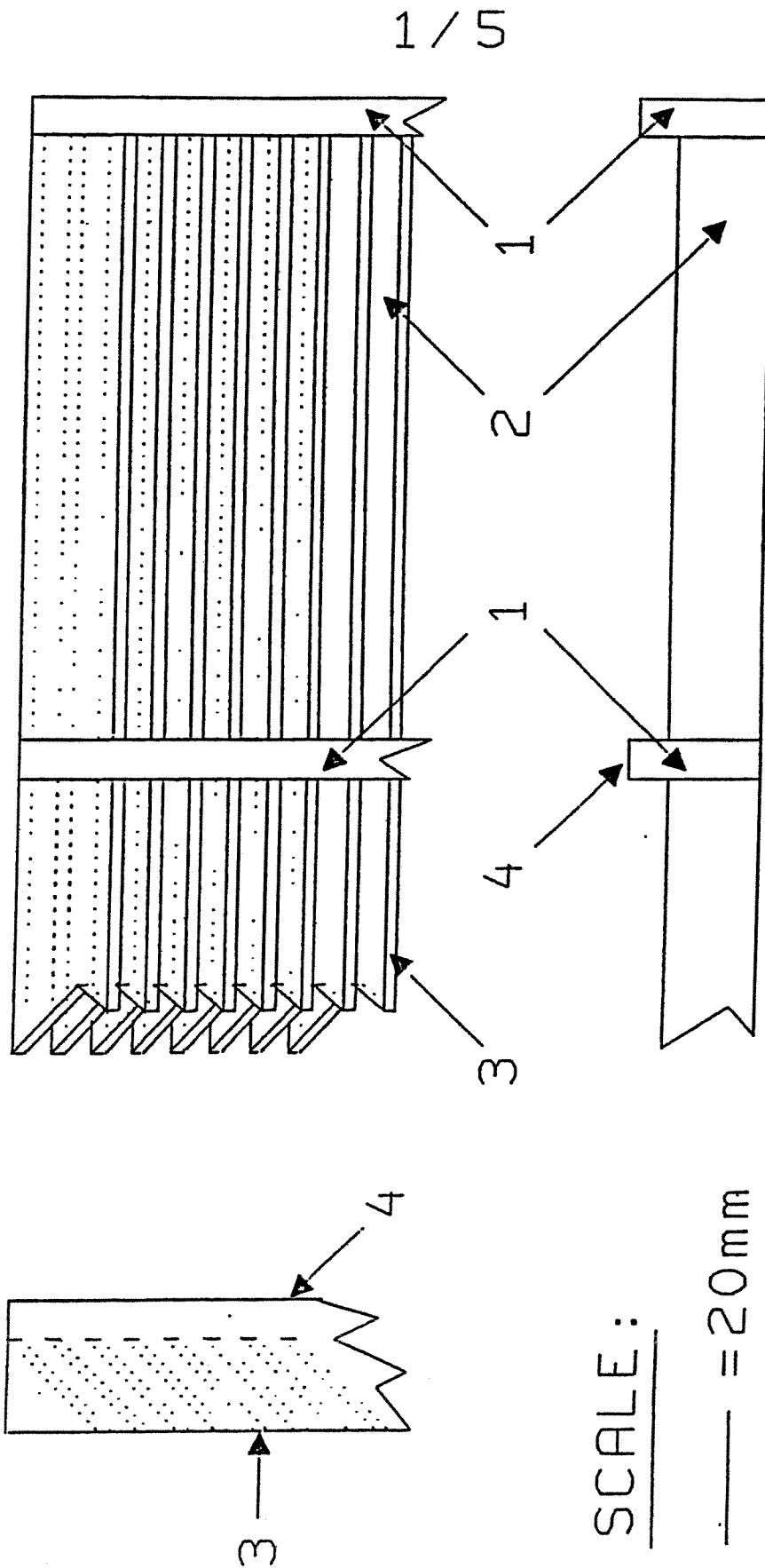


FIG. 1

2/5

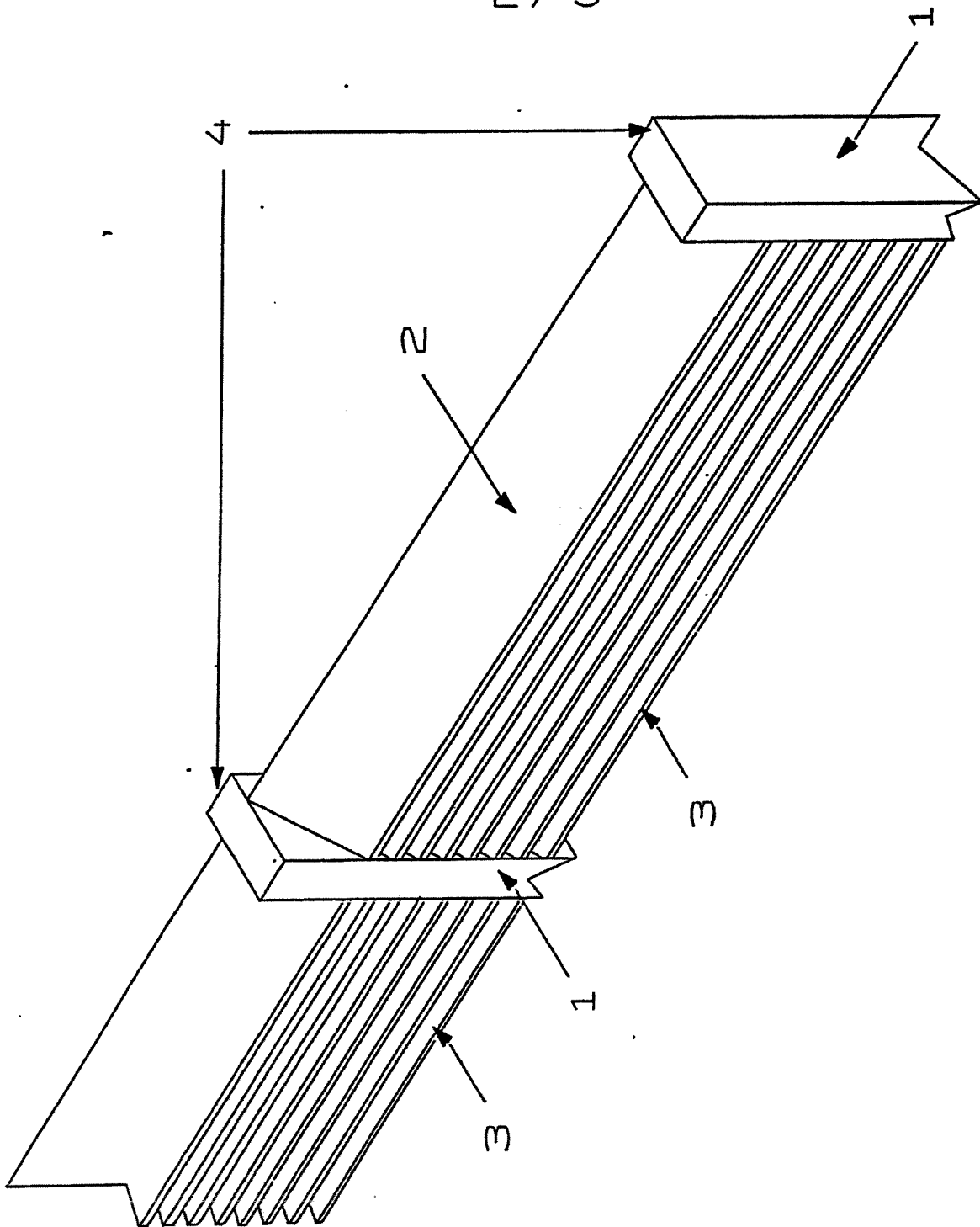


FIG. 2

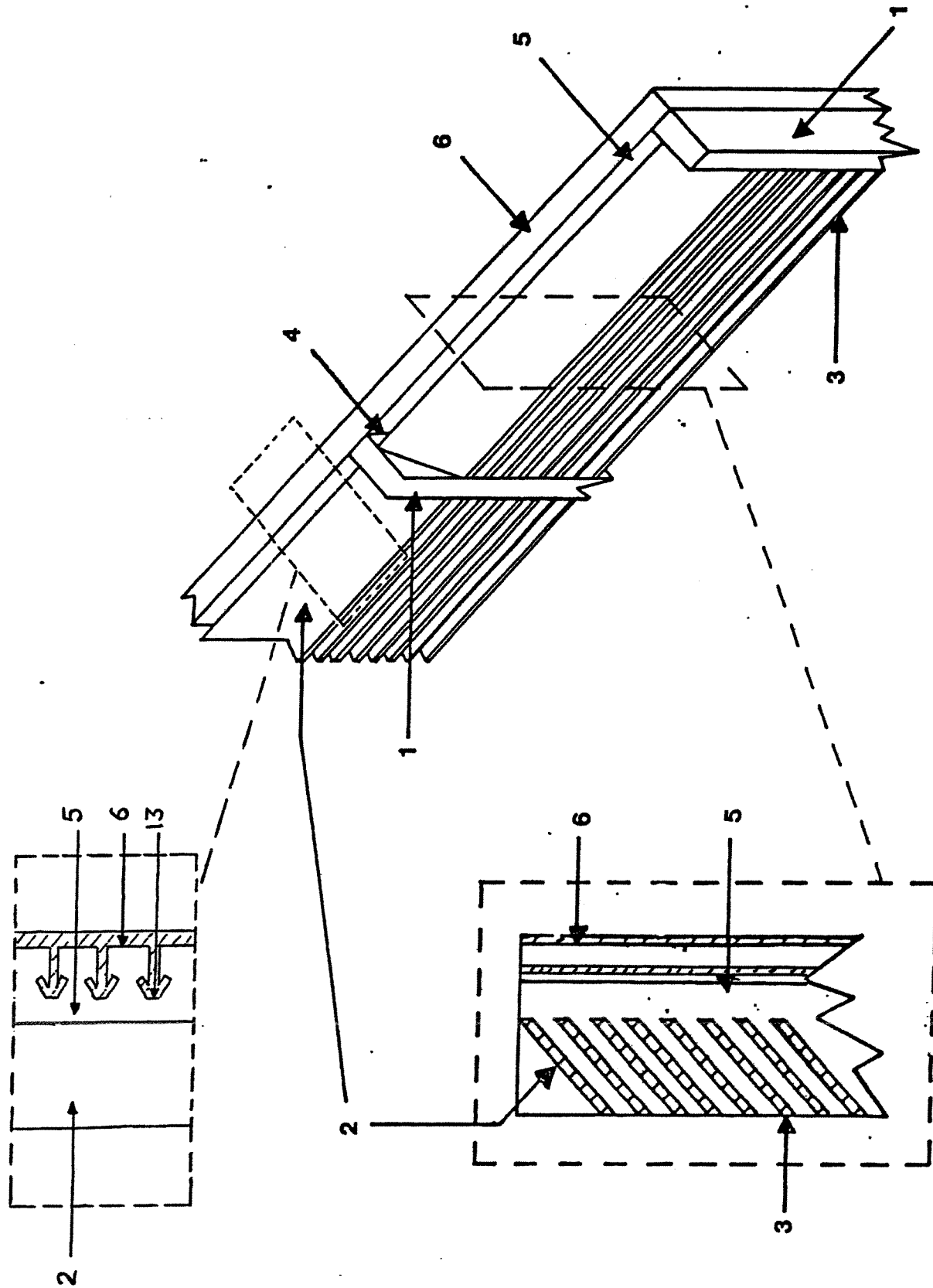
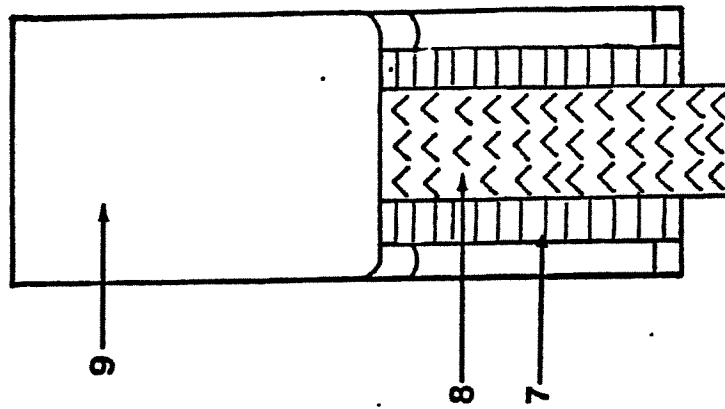
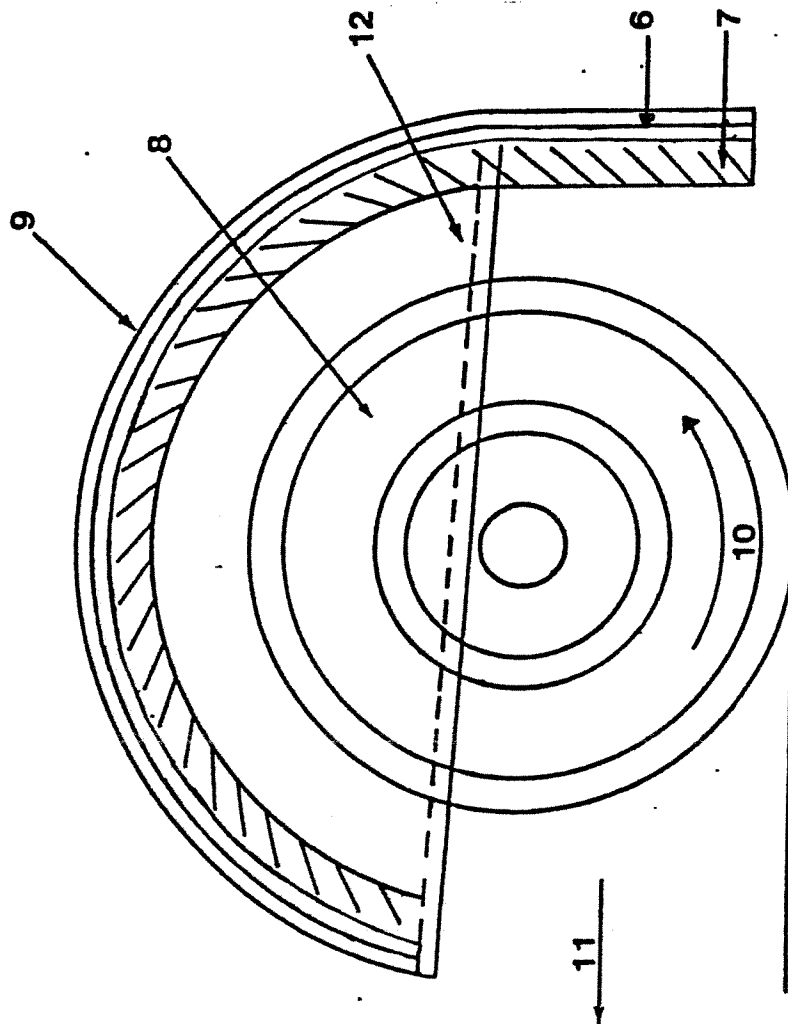


FIG. 3

VIEW A



VIEW A



5/5

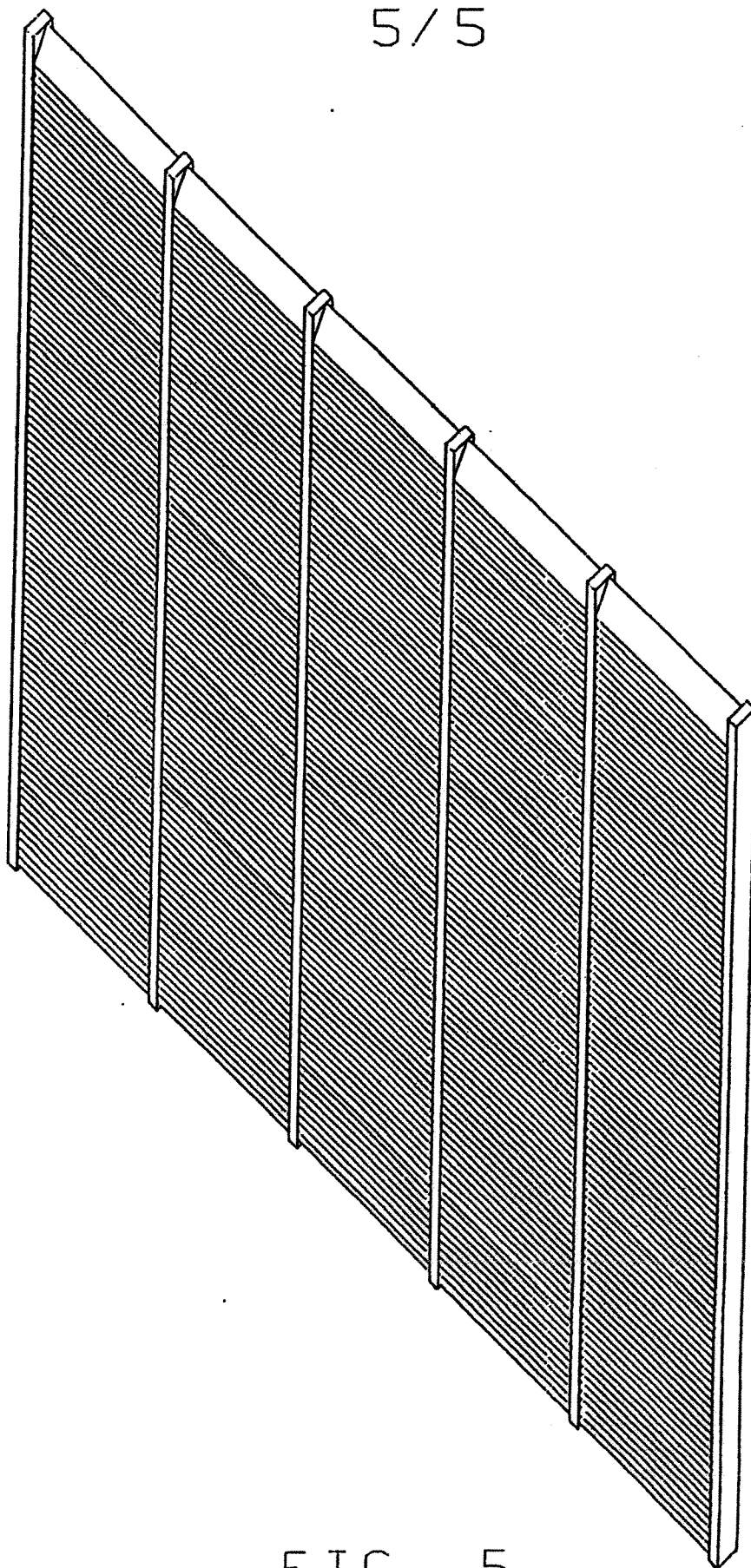


FIG. 5

SPRAY SUPPRESSION DEVICE FOR VEHICLES

This invention relates to a spray suppression device for vehicles, and is particularly suitable for incorporation into a vehicle mudflap or mudguard.

It is well known that vehicles travelling on wet road surfaces can generate spray. The spray can be especially hazardous when it causes a significant reduction in visibility for:-

- a) Following vehicles.
- b) Vehicles in the process of overtaking.
- c) The backward vision of the vehicle creating spray.

This happens especially when heavy vehicles travel at speed on motorways.

At the present time the law requires heavy goods vehicles to be fitted with spray suppression devices. Current devices have very limited spray suppression ability and the spray hazard is far from being removed.

Spray is generated when a high energy stream is suddenly brought to rest; the resulting dissipation of energy causes break-up of the water stream into tiny droplets which are then carried by the airstream from the vehicles wheels in all directions. The problem is how to divert water leaving the wheels, back to the road, without the water break-up and recirculation that generates an undue amount of spray. A method for measuring the effectiveness of a spray suppression device is detailed in the British Standard BS AU 200/2.

Previous attempts at solving this problem are described in GB-A-2146598 and GB-A-2143189.

Another form of spray suppression device is described in my British Patent Specification GB-A-2198696A.

The present invention is intended to provide an alternative and simplified form of spray suppression device.

According to the present invention, there is provided a spray suppression device for vehicles comprising a backing sheet and a plurality of generally parallel, elongate slats spaced from the backing sheet, the slats having their longer dimension parallel with the backing sheet and their shorter dimension inclined to the plane of the backing sheet, and the backing sheet including a plurality of ribs having their longer dimension generally perpendicular to the slats.

In a preferred embodiment of the invention, each rib is of generally T-shaped cross-section with the base of the T secured to the backing sheet, and the head of the T modified towards an arrow-headed shape.

The invention will now be described with reference to the following drawings, in which:-

- Fig.1 Shows standard orthogonal views of a portion of the invention.
- Fig.2 Shows an isometric view of a portion of the invention.
- Fig.3 Shows an isometric view of a portion of the invention including arrow-headed ribs extending from a back plate and also the cross-sectional detail.
- Fig.4 Shows how the invention is used relative to the wheel of the vehicle.
- Fig.5 Shows an impression of the complete device (excluding any additional features such as methods of fixing the invention to the wheel arch).

The invention has three main features in its design, the vertical support members 1, the horizontal tilted slats 2, and arrow-headed rib members 13 extending from the backing plate 6.

3.

The invention is designed such that the tilted slats 2 fit between the vertical support members 1 at an angle of 45°. This angle is not absolute but has been chosen to ensure flexibility of the invention; it may well be found that the angle of each tilted slat 2 will vary to maximise the invention's efficiency.

The leading edge 3 of the tilted slats 2 is flush with the vertical support members 1, however the trailing edge of the tilted slats 2 is not flush with the back 4 of the vertical support members, see fig.1 and fig.2. This is to create a gap 5 between the tilted slats 2 and the arrow-headed ribs 13, as shown in fig.3. The vertical support members 1 are moulded such that they are integral with the slats 2 and the back plate 6. The effect of the ribs 13 is to provide the back plate 6 with a set of channels between adjacent ribs. These are designed so that the water is directed to back of the channel, and drains downwards via the channels to the road.

The reverse side of the arrow-head contains the water in the channel, preventing the water from splashing back out to cause more spray. The 'T'-shape, modified towards an arrow-head shape, is suitably about 18mm in depth. Although a 'T'-shape modified towards an arrow-head shape has been described, any suitable rib may be used that effectively directs water into the channel formed by the ribs and subsequently directs water in the channel to the road.

In fig 4 the device 7 of the invention is attached to the wheel side of the wheel arch 9 of a vehicle, and is wider than the wheel(s) 8, as given in the British Standard BS AU 200/2, and as shown in fig 4.

The device 7 of the invention can replace the mudflap and run along the inside of the wheelarch 9.

The device 7, as shown in fig 4, is effective when the vehicle is moving in direction 11, and thus the wheel rotates in direction 10. This means that the water thrown up passes between the tilted slats 2 and hits the arrow-headed ribs of the back plate.

The water is incident on the back plate 6, and if any were reflected back it would drain down the gap 5. At low speeds water will also be returned to the road off the leading edge 3 of the slats.

A side cover 12 may be fitted to the outside of the wheel arch and may be readily detachable from the wheel arch. The cover may be attached by dzus fasteners around the circumference of the wheel arch. The bottom of the side cover has a turned up lip and slopes downwards towards the rear of the wheel, to make a channel. Excess water falling down the inside of the cover will then fall into the channel and be directed into the backplate of the invention, and thus drained to the road.

Fig 5 shows an overall impression of the complete invention. It can be seen that the vertical support members 1 will add strength to the device.

It should be noted that this invention is intended for use on all goods vehicles, tractor units and trailers, as well as other vehicles, cars, vans, motorcycles etc.

The device of the invention may be formed of any suitable material, such as plastics or rubber material, since such materials are generally impervious to water, and can be moulded into the required shapes. Alternatively, especially when the device is incorporated into a mudguard, the device may be formed integrally with part of the mudguard, and may in such circumstances be formed of metal. Furthermore, the device may be secured to the vehicle in any suitable manner.

What I claim is:

1. Spray suppression device for vehicles comprising a backing sheet and a plurality of generally parallel, elongate slats spaced from the backing sheet, the slats having their longer dimension parallel with the backing sheet and their shorter dimension inclined to the plane of the backing sheet, and the backing sheet including a plurality of ribs having their longer dimension generally perpendicular to the slats.
 2. The device to claim 1 wherein each of the ribs includes a surface adapted to act as a drain channel.
 3. The device of claim 2 wherein said surface is generally concave.
 4. The device of claim 3 wherein each rib is of generally T-shaped cross-section with the base of the T secured to the backing sheet, and with the head of the T-shape modified towards an arrow-head shape to effectively direct water into the channel and contain water in the drainage channel.
 5. The device of any one of claims 1 to 4 including support members on the backing sheet, extending generally perpendicular to said ribs, for supporting the slats.
 6. The device of any one of claims 1 to 5 formed of a flexible material.
 7. A mudguard or mudflap for a vehicle including the spray suppression device of any one of claims 1 to 6.
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